

# A revision of the spider mites (Acarina: Tetranychidae) of South Africa with descriptions of a new genus and new species.

by

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## ABSTRACT.

This taxonomic study comprises a general review of the distribution, classification and external morphology of the phytophagous Tetranychidae of South Africa. Sixteen species are described of which *Oligonychus proteae* and *Parapetrobia* (n.gen.) *capensis* are new to science. Keys to the genera and species are given and a list of the known host plants follows the description of each species.

## INTRODUCTION.

The importance of tetranychid mites to agriculture has long been established. All the members are strictly phytophagous. There are also records of species (*Bryobia praetiosa* Koch) invading dwelling houses. The only known record of migrations of this nature in South Africa is from a farm near Victoria West during the early summer of 1958. In a preliminary report on the distribution of the spider mites in South Africa (Ryke & Meyer, 1958) we also discussed the possibility of biological control of these pests by means of predacious mites. A few notable contributions to our knowledge of the spider mites of this country are those of Tucker (1926), Lochner (1951) and Georgala (1955, 1958). Keys to the suborders of the Acarina and the South African families of the Trombidiformes associated with plants as well as sketches of the morphological characters used in the keys are given in a separate paper (Ryke & Meyer, in press). For a review of the world tetranychid fauna the reader is referred to Pritchard & Baker (1952, 1955).

The present paper mainly deals with part of a collection of mites made in different parts of South Africa from 1952-1958. Of the sixteen species of Tetranychidae present in the collection two are described as new to science. The type material is deposited in the Institute for Zoological Research of the

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## DESCRIPTIVE SECTION.

Cohors **PROMATINA** Cunliffe, 1955.

The following characteristics are distinctive for this group: The tracheal system is distinct; the peritremes may be present or absent; the setation of the body indicates body segmentation, but the actual segmentation is not discernible; the propodosoma may have sensory setae or pseudostigmatic organs; the usually well-developed bodies are often provided with sclerotised areas or plates.

Subcohors **ELEUTHEROGONA** Oudemans, 1909.

This subcohors contains those families which are provided with an external peritreme together with internal tracheae, and a palpal thumb-claw complex.

Superfamily **TETRANYCHOIDEA** Rekk, 1952.

The mites belonging to this superfamily can readily be distinguished from other prostigmatic mites in having the following characteristics: The movable part of each chela is long, whiplike, strongly recurved proximally and set in the fused cheliceral bases (the stylophores); the tarsal claws and empodia are usually provided with tenent setae; all the members are strictly phytophagous. It was only recently that certain non-phytophagous genera, which were included in the tetranychoid families, were removed to other prostigmatic families. The last of these genera was *Neophyllobius* Berl. which McGregor (1950a) referred to the family Raphignathidae. The superfamily Tetranychoidea comprises the families Tetranychidae Donnadieu, 1875, Tenuipalpidae Berlese 1913, Tuckerellidae Baker and Pritchard 1953 and Linotetranidae Baker and Pritchard, 1953.

Family **TETRANYCHIDAE** Donnadieu, 1875.

The mites belonging to this family constitute one of the most important economic problems with which the gardener, horticulturalist and fruitgrower have to contend. In certain areas some of these species are serious pests. They are popularly known as "red spiders", "fruit tree mites", "spinning mites" or "spider mites".

The family Tetranychidae is characterised by the presence of duplex setae (and not sensory pegs) on tarsi I and II; the chelicerae are needle-like and covered at their bases by a mandibular plate; the fourth palpal segment is

provided with a strong "claw"; the dorsum bears a maximum of 16 pairs of setae; the collar tracheae are situated beneath the mandibular plate. The tarsal appendages are provided with peculiar tenent setae. The main characters used for identification of Tetranychidae are the claw-complex and aedeagus or penis of the male.

**Key to the South African genera and species  
of the family Tetranychidae.**

1. Empodium without tenent setae (Subfamily Tetranychinae) . . . . . 2
- Empodium with tenent setae (Subfamily Bryobinae) . . . . . 6
2. Dorsally, tarsus I with two pairs of duplex setae, the proximal member of each pair being shorter than the distal member; empodium well-developed (Tribe Tetranychini) . . . . . 3
- Dorsally, tarsus I with at most a single pair of usually loosely associated duplex setae, the proximal member usually as long as or longer than the distal member, or else the duplex setae are absent; empodium very small or absent . . . . . Tribe Eurytetranychini
- Empodium rudimentary and rounded, appearing absent . . . . .  
**Eutetranychus** Banks
- a. Body with dorsal setae not set on tubercles; dorso-central setae conspicuously shorter than the dorsolateral hysterosomals . . . . .  
**E. banksi** (McGregor)
3. Empodium clawlike with paired proximo-ventral setae . . . . . 4
- Empodium not clawlike but composed of two to three pairs of proximo-ventral setae . . . . . 5
4. Opisthosoma with two pairs of para-anal setae; dorsal body setae arise from strong tubercles . . . . . **Panonychus** Yokoyama
- a. The outer sacral setae are equal in length to the clunal setae . . . . .  
**P. citri** (McGregor)
- Opisthosoma with one pair of para-anal setae; dorsal body setae not arising from tubercles . . . . . **Oligonychus** Berl.
- a. Tibia I with seven tactile setae; tarsus I with a single seta on venter beyond first duplex setae; the male with aedeagus bent downwards . . . . . b
- Tibia I with eight or nine tactile setae; tarsus I usually with two tactile setae on venter beyond first duplex setae; the male with the aedeagus bent upwards . . . . . d
- b. Tarsus I with three tactile setae proximal to duplex setae . . . . . c
- Tarsus I with four tactile setae proximal to duplex setae. The distances between the two tactile setae and the sensory seta on

the dorsal side of the tibia are much smaller than in other members of the *Ununguis* subgroup . . . . . **O. proteae**, n.sp.

c. Aedeagus gradually narrowing distally. The bent portion of aedeagus with tip directed ventrad . . . . . **O. coffeae** (Nietner)

— Aedeagus with distal end abruptly narrowed. The bent portion forms an obtuse angle with shaft . . . . . **O. bicolor** (Banks)

d. Hysterosoma with integumentary striations longitudinal caudad of inner sacra. Knob of aedeagus about twice as wide as stem of the knob . . . . . **O. pratensis** (Banks)

— Hysterosoma with integumentary striations transverse between the inner and outer sacral setae. The aedeagus with the distal enlargement strongly convex on the dorsal margin and the acuminate tip caudo-ventrally directed, reaching the level of the axis of the shaft . . . . . **O. hadrus** Pritchard & Baker

5. Opisthosoma with two pairs of para-anal setae; duplex setae situated near each other and placed near the distal end of tarsus I. . . . .

**Eotetranychus** Oudemans

a. The female may be recognised by the four tactile setae on tarsus I proximal to the duplex setae and the fact that the dorsal setae are longer than the distances between their bases. The aedeagus is distinctive in being enlarged at the distal end and terminally forms a knob which has a dorsal projection and a curved ventrad projection . . . . . **E. perplexus** (McGregor)

— Opisthosoma with a single pair of para-anal setae; tarsus I with the duplex setae widely spaced on the dorsum . . . . . **Tetranychus** Dufour

a. The duplex setae on tarsus I in a line with most of the proximal setae; distal knob of aedeagus of male with anterior and posterior projections, the latter of which curves sharply downwards like the claw of a hammer . . . . . **T. desertorum** Banks

— Tarsus I with a proximal pair of duplex setae situated distally to the proximal tactile setae; posterior projection of knob of aedeagus not like the claw of a hammer . . . . . b

b. Knob of the aedeagus always small, about one-sixth the length of margin of shaft . . . . . **T. telarius** Linn.

— Knob of aedeagus moderately enlarged, about one-fourth the length of the dorsal margin of the shaft . . . . . **T. atlanticus** McGregor

6. Propodosoma with four pairs of dorsal setae; true claw uncinuate and with one or several pairs of medio-lateral tenent setae . . . . . **Bryobia** Koch

a. With strong anterior propodosomal projections; empodium of leg I in the adult female consisting of a single pair of tenent setae; dorsal setae leaflike . . . . . **B. praetiosa** Koch

- Propodosoma with three pairs of dorsal setae; hysterosoma with ten pairs of hysterosomal setae of which three pairs are dorso-laterals; true claw a short, slender pad with a pair of tenent setae . . . . . 7
- 7. Empodium padlike or consisting of a pair of tenent setae . . . . .  
**Aplonobia** Womersley
  - a. Empodial pad twice as long as pad of the true claw; the stout dorsal setae, which are set on tubercles, are as long as the distances between their bases . . . . . **A. histicrina** (Berl.)
- Empodium not padlike but clawlike or uncinat . . . . . 8
- 8. Empodium clawlike and with two rows (each consisting of about 10-15 setae) of ventrally-directed tenent setae; tarsus I with two sets of duplex setae . . . . . **Petrobia** Murray
  - a. Dorsal setae set on tubercles and longer than the distances between the bases of consecutive setae . . . . . **P. harti** (Ewing)
- Dorsal setae not on tubercles and, at least in the anterior half of the dorsum, shorter than the distances between their bases . . . . . **P. latens** (Müller)
- Empodium uncinat and with two rows (each consisting of about five to eight setae) of dorsally-directed tenent setae; tarsus I with four sets of duplex setae . . . . . **Parapetrobia**, n.gen.
  - a. The stout dorsal setae, arising from strong tubercles, are much longer than the distances between the bases of consecutive setae . . . . . **P. capensis**, n.sp.

#### Subfamily TETRANYCHINAE Berl., 1913.

The females of the Tetranychinae possess two pairs of anal setae and the males have four pairs of genito-anal setae. The true claw is reduced to a small pad, bearing a pair of long tenent setae and the empodium is devoid of any tenent setae. The dorsal surface of the body is provided with three pairs of propodosomal and ten pairs of hysterosomal setae. The dorso-sublaterals are absent in the latter series.

#### Tribe TETRANYCHINI Rekk, 1913.

The majority of the genera in the family Tetranychidae are members of the tribe Tetranychini. This tribe also includes most of the economically important species. They can readily be distinguished from the other tetranychids by the well-developed empodium usually represented by several pairs of ventrally-directed proximo-ventral setae and a dorso-median clawlike appendage. The dorsal surface of tarsus I is usually provided with two pairs of duplex setae whereas tarsus II bears one pair of duplex setae only. The proximal seta of the duplexes is relatively well-developed and crosses the much longer distal member. Because of the diagnostic value of the aedeagus of the male both

sexes are often necessary to determine the particular species. The males must be mounted laterally to see the outline of this structure. The females should be mounted dorsal side upwards.

### Genus *Tetranychus* Dufour, 1832.

The synonyms of the genus *Tetranychus* are given by Pritchard and Baker (1955). Mites belonging to this genus are found on the under side of the leaves of a multitude of host plants where they usually form colonies. The different species are often very similar in appearance and can only be identified under the high power of a research microscope. Ewing (1913) found that the genital armatures of the males provide excellent characters for taxonomic purposes. This also proved to be an important structure for the identification of species in other tetranychid genera.

The aedeagus in this genus is bent sharply dorsad, and the shape of its distal end is an important diagnostic characteristic for the identification of the species. They are further characterised by the presence of a pair of para-anal setae and the absence of the postanals; the empodium is split into two or three pairs of proximoventral setae or appendages and, in the male, it may bear a small spur; the peritreme is simple with a long four or five chambered loop, rarely anastomosing; the duplex setae on tarsus I are well separated in all the species.

### Telarius-group Pritchard and Baker.

Members of this group may be recognised by the presence of a tiny mediodorsal spur on the empodium or the entire absence of the spur; the proximal pair of duplex setae on tarsus I are distal to the four tactile setae at the base of the segment; the transverse striations between the third pair of dorsocentral hysterosomals and the inner sacrals in the female are in the form of a diamond-shaped figure.

### *Tetranychus telarius* Linn., 1758 (Figs. 1-8).

As *Tetranychus telarius* has two basic colour varieties namely the greenish, two-spotted form and the carmine form, it led to much confusion as to the correct nomenclature of this species. *Tetranychus bimaculatus* Harvey, 1898 was the name commonly used in South Africa for this mite. Recently Pritchard & Baker (1955) dealt with a large number of synonyms for this species and they pointed out that *T. bimaculatus* as well as *T. multisetis* McGregor, 1950 are synonyms of *T. telarius*.

*Female* (fig. 1).

Dimensions: Length of body (excluding gnathosoma), 482  $\mu$ ; breadth of body, 360  $\mu$ .

The females exhibit variations in colour which depend on the food plants and seasons. Actively feeding females are greenish to brick-red in colour with a prominent dark spot on each side of the body; as the mite feeds the spots may enlarge to cover the greater part of each side of the oval-shaped body.

*Dorsum.* The integumentary transverse striations between the third pair of dorso-centrals and the inner sacral setae form a diamond-shaped figure. The striations behind and laterad of the diamond-shaped figure are mostly longitudinal. The dorsum is provided with 13 pairs of linear-lanceolate, finely setose setae. One perfect and one imperfect eye cornea are present on each side.

*Gnathosoma.* The mandibular plate is rounded anteriorly and not distinctly notched. The terminal segment (thumb) of the palpus (fig. 6) which is about as long as it is broad, bears a terminal sensilla. On its dorsal surface it bears another sensilla which is spindle-shaped and slightly shorter than the terminal one. The usual five setae are present on the thumb.

*Legs.* The legs are shorter than the length of the body. Tarsus I (fig. 3) is provided dorsally with two pairs of well separated duplex setae, the proximal pair of which are distad of the four proximal tactile setae. The empodium (fig. 4) consists of six empodial setae, the proximal pair being the strongest. The mediodorsal spur of the empodium is tiny or absent.

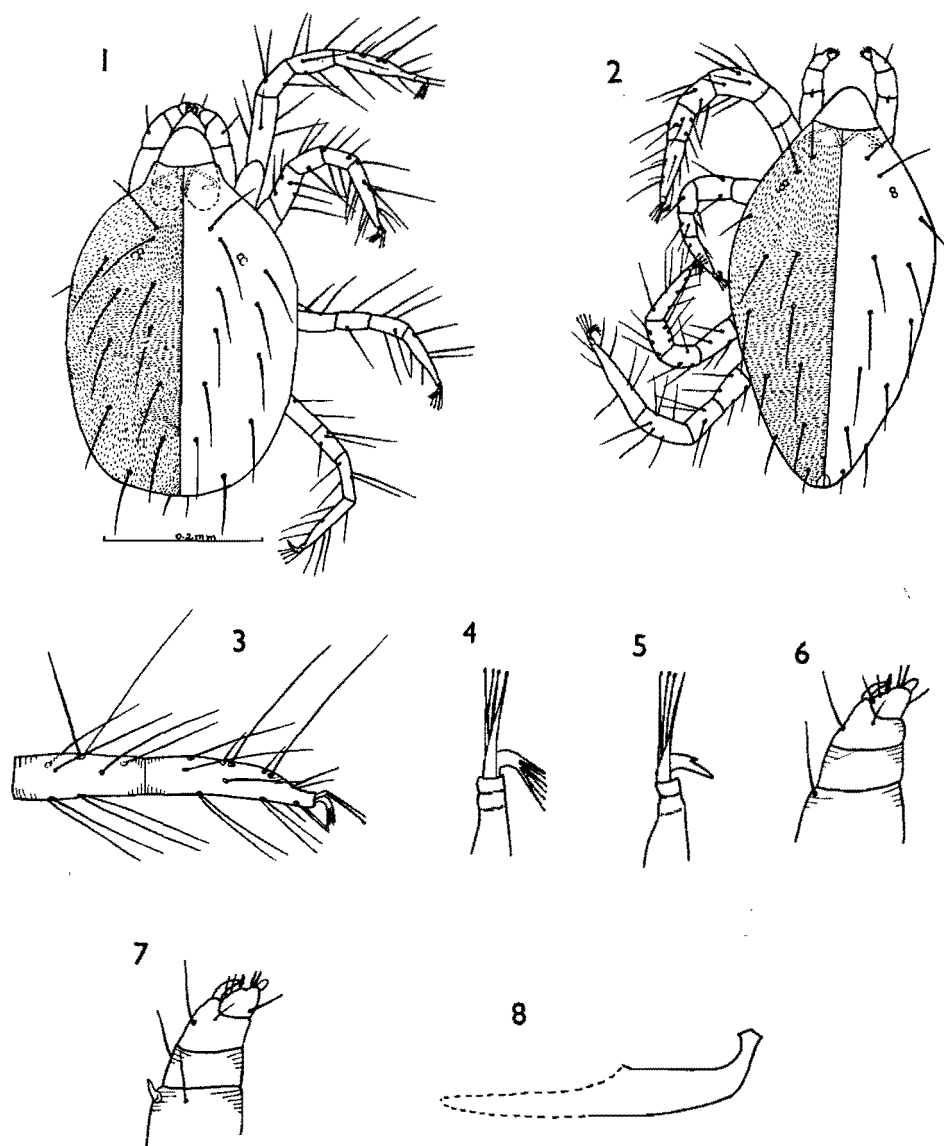
*Male* (fig. 2).

Dimensions: Length of body, 312  $\mu$ ; breadth, 203  $\mu$ .

The body is smaller and narrower than in the female. The four legs are slightly shorter than the body (excluding the gnathosoma). The palpus (fig. 7) is provided with a spur on the second segment. The empodium of leg I is stout and bears a straightish narrow spur situated medio-dorsally. The empodium (fig. 5) consists of six short empodial digits.

The aedeagus (fig. 8) has a rodlike inner lobe which is longer than the thick shaft; it bends upwards and forms an angle of approximately 90°. The small basilar lobe on the upper side of the shaft projects slightly backwards. The knob is always small with an anterior and a posterior projection.

*Hosts and distribution.* This cosmopolitan species occurs in most parts of South Africa. It attacks nearly every plant and is a serious pest of fruit trees and other plants in certain parts of the country. The following is a list of plants on which these mites are known to occur: *Phaseolus vulgaris*, *Zea mais*, *Solanum tuberosum*, *Primula* sp., *Prunus persica*, *Sterculia murex*, *Gossypium*, *Digitaria diversinervis*, *Citrus limonia*, *Citrus sinensis*, *Poinsettia pulcherrima*, *Physalis peruviana*, *Musa sapientum*, *Pirus malus*, *Ficus carica*, *Digitalis purpurea*, *Rosa* sp., *Prunus domestica*, *Pirus communis*, *Dahlia* sp., *Dianthus caryophyllus*, *Vitis* sp., *Pharbitis hispida*, *Prunus amygdalis*, *Medicago sativa*, *Morus* sp., *Sorghum saccharatum*, *Eriobotrya japonica*, *Pelargonium* sp., *Hibiscus rosa sinensis*, *Populus canescens*, *Psidium guayava*, *Lupinus* sp.,



Figs. 1-8. *Tetranychus telarius* (Linn.)

Fig. 1, dorsum of female; fig. 2, dorsum of male; fig. 3, tibia & tarsus, leg I of female; fig. 4, claw complex, leg I of female; fig. 5, claw complex, leg I of male; fig. 6, palp of female; fig. 7, palp of male; fig. 8, aedeagus of male.



*Tropaeolum*, *Helianthus annuus*, *Ricinus communis*, *Xanthium pogens.*, and many species of weeds.

**Discussion.** According to Pritchard & Baker (1955) it is possible that *T. telarius* represents a polytypic species which consists of a number of subspecies. Collections from different parts of South Africa revealed the presence of two colour varieties namely the carmine and the greenish forms. Other intra-specific variations which were observed are the following: The degree of development of the anterior and posterior projections of the knob of the aedeagus; in some specimens the projections are more conspicuous than in others, in some cases the proximal pair of duplex setae on tarsus I are situated posterior to their usual position. These variations, however, do not even merit the creation of new subspecies.

### ***Tetranychus atlanticus* McGregor, 1941 (Figs. 9-14).**

#### *Female.*

Dimensions: Length of body (excluding gnathosoma) 445  $\mu$ ; breadth of body 345  $\mu$ .

No characters of taxonomic value have been found to separate the females of *T. atlanticus* and *T. telarius*. In both species the integumentary striations form a diamond-shaped figure between the inner lumbar (3rd pair of dorso-central setae) and inner sacral setae. The appearance of the active females of *T. atlanticus* is very similar to the greenish form of *T. telarius*.

#### *Male.*

Dimensions: Length of body, 320  $\mu$ ; breadth of body, 159  $\mu$ .

The body is shorter and narrower than that of the female. The aedeagus (fig. 14) has the inner lobe rodlike; the shaft is thick and stout. The latter is broader at its base than at its distal end where it bears the prominent hook. A small reduced basilar lobe is present on the upper side of the shaft. The knob is present at the distal end of the shaft and is about one-third to one-fourth the length of the dorsal margin of the shaft. The anterior projection is shorter and rounder than the posterior one which is small and acute. Judging from the figure given by Pritchard & Baker (1955) the anterior

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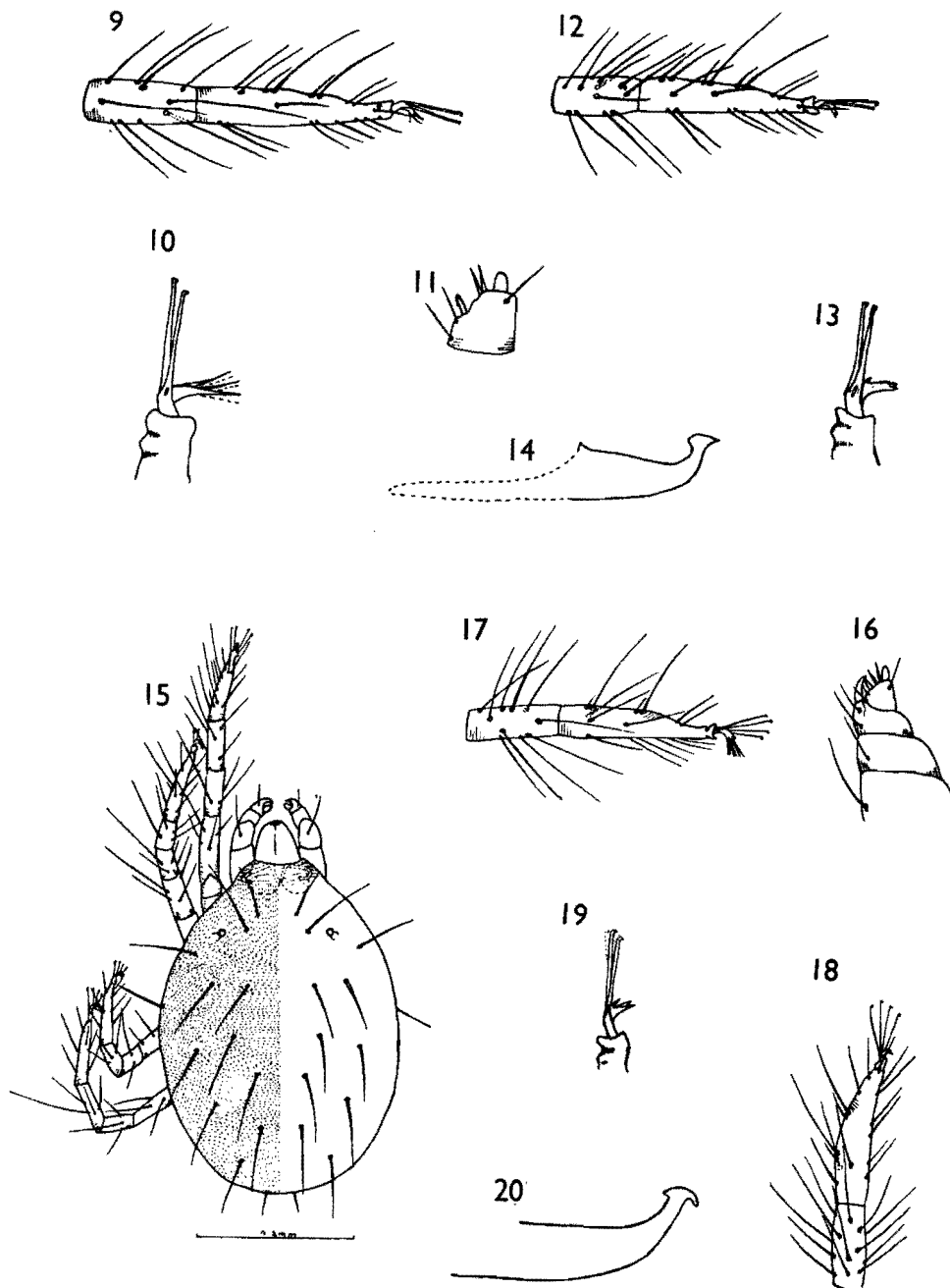
### **EXPLANATIONS OF FIGURES.**

Figs. 9-14. *Tetranychus atlanticus* McGregor.

Fig. 9, tibia & tarsus, leg I of female; fig. 10, claw complex, leg I of female; fig. 11, palpal tarsus of male; fig. 12, tibia & tarsus, leg I of male; fig. 13, claw complex, leg I of male; fig. 14, aedeagus of male.

Figs. 15-20. *Tetranychus desertorum* Banks.

Fig. 15, dorsum of female; fig. 16, palp of female; fig. 17, tibia & tarsus, leg I of female; fig. 18, tibia & tarsus, leg I of male; fig. 19, claw complex, leg I of male; fig. 20, aedeagus of male.



projection of the South African specimens appears smaller than that of the American forms. The shaft also appears somewhat broader. It is, however, very probable that the American and South African species are conspecific.

*Hosts and distribution.* *T. atlanticus* has been recorded from the United States, Turkey and Japan. The species is usually found on low-growing plants. Specimens of this species were collected from unidentified hedge plants in Tamboerskloof, Cape Town.

### **Desertorum-group Pritchard & Baker.**

The mites of this group are recognised by the proximal pair of duplex setae which arc in a line with the four tactile setae on tarsus I; the longitudinal striations on the dorsum of the female form a broad triangle between the inner lumbar and the inner sacral setae. The specific identity of the females belonging to this group cannot be ascertained before observation of their males.

#### ***Tetranychus desertorum* Banks, 1900. (Figs. 15-20).**

According to Pritchard & Baker (1955) this species is synonymous with certain species which McGregor referred to the genus *Septanychus*. These authors consider this genus to be a synonym of *Tetranychus*.

*Female* (fig. 15).

Dimensions: Length of body, 500  $\mu$ ; breadth of body, 400  $\mu$ .

In dorsal view the outline of the body is ovate.

*Dorsum.* The striations resemble those of *Tetranychus telarius*. The 26 dorsal body setae are linear-lanceolate, finely setose and not set on tubercles. One perfect and one imperfect eye cornea is present on each side of the body.

*Gnathosoma.* The mandibular plate is rounded anteriorly. The collar tracheae are U-shaped, the outer arm being longer than the inner one. The last segment (thumb) of the palpus (fig. 16) is slightly longer than broad and bears a terminal sensilla, which is nearly twice as long as it is thick, a dorsal sensilla, which is ovate-clavate, and the usual five setae.

*Legs.* Tarsus I (fig. 17) is dorsally provided with two sets of duplex setae, the proximal pair of duplex setae being in a line with the majority of other proximal setae. The empodium, which consists of six empodial setae, bears a spur mediodorsally. A pair of tenent setae arises from a pad which is situated on each side of the empodium.

*Male.*

Dimensions: Length, 381  $\mu$ , breadth, 210  $\mu$ .

The body is smaller and narrower than that of the female. The second segment of the palpus bears a hornlike spur, dorsally. The aedeagus (fig. 20) has a long rodlike inner lobe and an inconspicuous basilar lobe. The distal

half of the shaft rapidly tapers posteriorly to the point of origin of the hook and bends upward to form an angle of about  $90^{\circ}$ . Anteriorly the knob is provided with a small acute projection and posteriorly with a slightly larger curved acute projection.

*Hosts and distribution.* *T. desertorum* has a wide distribution in South Africa and occurs on a great variety of host plants. The following is a list of host plants on which this mite has been found in the Western Province and the Transvaal: *Physalis peruviana*, *Bidens pilosa*, *Phaseolus vulgaris*, *Pharbitis hispida*, *Dryopteris* sp., *Rubus pinnatus*, *Fragaria carica*, *Zantedeschia aethiopica*, *Physalis* sp., *Dahlia* sp., *Pirus malus*, *Zinnia*, *Hydrangea hortensia*, *Pelargonium* sp., *Vitus* sp., *Prunus persica*, *Althaea rosea*, *Helianthus annuus*.

### Genus *Oligonychus* Berl., 1886.

Pritchard & Baker (1955) regard *Paratetranychus* Zacher as a synonym of *Oligonychus*. This genus can be identified by the presence of a clawlike empodium which have six to twelve setae proximoventrally. The peritreme is usually straight and terminates in a simple bulb. The caudal pair of para-anal setae are absent.

Pritchard & Baker (1955) use the number of tactile setae on tibia and tarsus I, as well as the aedeagus, as taxonomic features to divide this genus into groups and subgroups.

### Ununguis-group Pritchard & Baker.

Mites of this group are characterised by the presence of six or seven tactile setae on tibia I and one to four setae proximal to the duplex setae on tarsus I. The empodium consists of four to six proximoventral setae, with the exception of tarsus I of the male which is often provided with three. The aedeagus of the male bends ventrad. There are transverse striations throughout the dorso-central area of the hysterosoma.

### *Oligonychus bicolor* (Banks), 1894 (Figs. 21-28).

#### *Female* (fig. 21).

Dimensions: Length of body,  $346\ \mu$ ; breadth of body,  $238\ \mu$ . The general appearance of the female is similar to that of the females of *Oligonychus coffeae*, *O. newcomeri* and *O. viridis*. The colour is dark red. The body outline is oval-shaped.

*Dorsum.* There are 26 well-developed, linear-lanceolate, distinctly setose setae (fig. 22) present on the dorsum. The striations are mostly transverse. In some specimens these striations are indistinct. One perfect and one imperfect eye cornea are present on each side of the propodosoma.

**Gnathosoma.** The mandibular plate (fig. 23) is notched in front. In specimens taken from the peach, the mandibular plate is not so deeply notched as it is in the specimens from the oak. Each of the collar tracheae (fig. 24) consists of a short, straightish tube which terminates internally in a swollen oval chamber. The "thumb" of the palpus (fig. 25) is broader than long and bears the terminal sensilla, which is nearly as thick as long, the dorsal sensilla, which is very small, and five additional setae.

**Legs.** Tarsus I (fig. 26) is dorsally provided with two sets of duplex setae; four setae (three of which are tactile) are borne proximad to the proximal set of duplex setae. Tibia I (fig. 26) bears eight setae of which seven are tactile. The empodium is clawlike and provided with six proximoventral setae. The usual four tenent setae are present.

#### *Male.*

Dimensions: Length, 291  $\mu$ ; breadth, 175  $\mu$ . The male is smaller than the female. The second segment of the palpus (fig. 27) is provided with a hornlike spur; the terminal sensilla of the thumb is much smaller than that of the female. The claws are similar to those of the female. The inner lobe of the aedeagus (fig. 28) expands dorsally to reach the basilar lobe which is rather inconspicuous. The stout, tapering shaft is deflected posteriorly to form an angle of about 90°. The hook, which tapers evenly to a tip, is devoid of a knob.

**Hosts and distribution.** In the Western Province and the Transvaal specimens were found on the following host plants: *Quercus* sp., *Senecio angulatus*, *Prunus persica*, *Trichelia dregeana*, *Vitis* sp., *Plumeria* sp., *Hakea* sp., *Pyracantha* sp.

#### ***Oligonychus coffeae* (Nietner), 1861.**

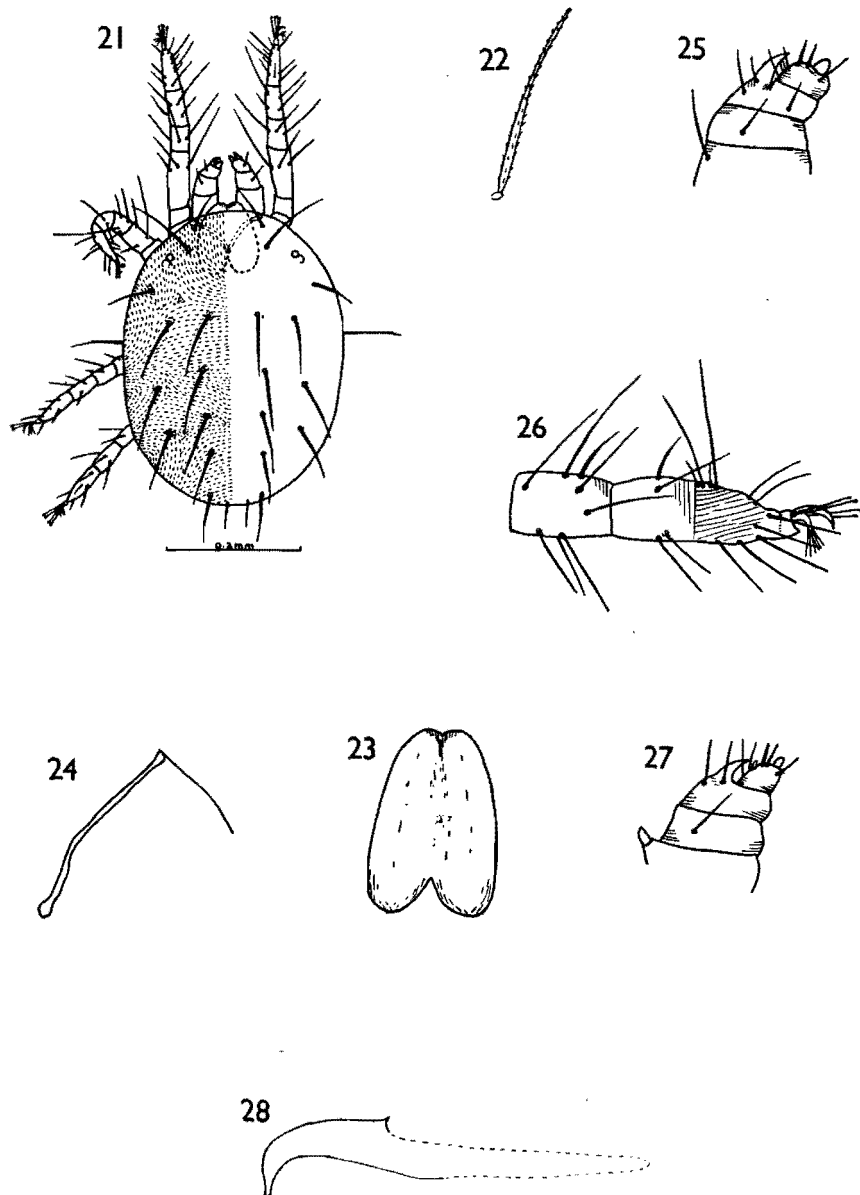
The female of this species is similar in appearance to the females of *Oligonychus biocolor*, *O. viridis*, and *O. newcomeri*. It bears seven tactile setae and one sensory seta on tibia I; three tactile setae and one sensory seta are situated proximal to the duplex setae on tarsus I. *O. coffeae* can be distinguished from the above-mentioned three species in the shape of the aedeagus; its distal bend is at a right angle to the shaft and it gradually tapers to a slender terminal truncated tip.

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#### EXPLANATIONS OF FIGURES

Figs. 21-28. *Oligonychus bicolor* (Banks)

Fig. 21, dorsum of female; fig. 22, dorsal seta; fig. 23, mandibular plate; fig. 24, collar trachea; fig. 25, palp of female; fig. 26, tibia & tarsus, leg I of female; fig. 27, palp of male; fig. 28, aedeagus of male.



This species was described by Tucker (1926) under the name *Oligonychus merwei*, collected from tea plants, Stanger, Natal. Pritchard & Baker (1955) consider it to be conspecific with *O. coffeae*.

***Oligonychus proteae* n.sp.** (Figs. 29-33).

Only the female of this species was found.

*Female* (fig. 29).

Dimensions: Length of body, 400  $\mu$ ; breadth of body, 320  $\mu$ ; length of leg I, 300  $\mu$ , leg II, 200  $\mu$ , leg III, 170  $\mu$ , leg IV, 170  $\mu$ .

The colour in the living form is red as in others members of the *Ununguis* subgroup. The general appearance of the female is similar to that of *O. yothersi*, *O. punicae*, *O. peronis*, *O. ununguis*, *O. conferarum*, and *O. mangiferus*. It can however readily be distinguished by the relative positions of the two tactile setae and the sensory seta on the dorsal side of tibia I. The distances between these setae are much smaller than in the other species.

*Dorsum*. The thirteen pairs of dorsal body setae, including the caudal pair, are well-developed, linear-lancelolate, finely setose and not set on tubercles. The striations of the hysterosoma are mainly transverse. One perfect and one imperfect eye cornea are present on each side.

*Gnathosoma*. The mandibular plate is not clearly emarginate in front. The peritreme is straight distally and scarcely enlarged at the tip. The last segment of the palpus (fig. 30) is distinctly broader than long; the terminal sensilla is about as broad as it is long.

*Legs*. As in other members of the *Ununguis*-subgroup it is characterised by eight setae (seven of which are tactile) on tibia I (fig. 31) and four tactile setae proximal to the duplex setae on tarsus I (fig. 31). Tibia II (fig. 32) is provided with five tactile setae. The empodial claw is slightly longer than the five proximoventral setae.

*Larva* (fig. 38). The three-legged larva exhibits the same characteristics as the female.

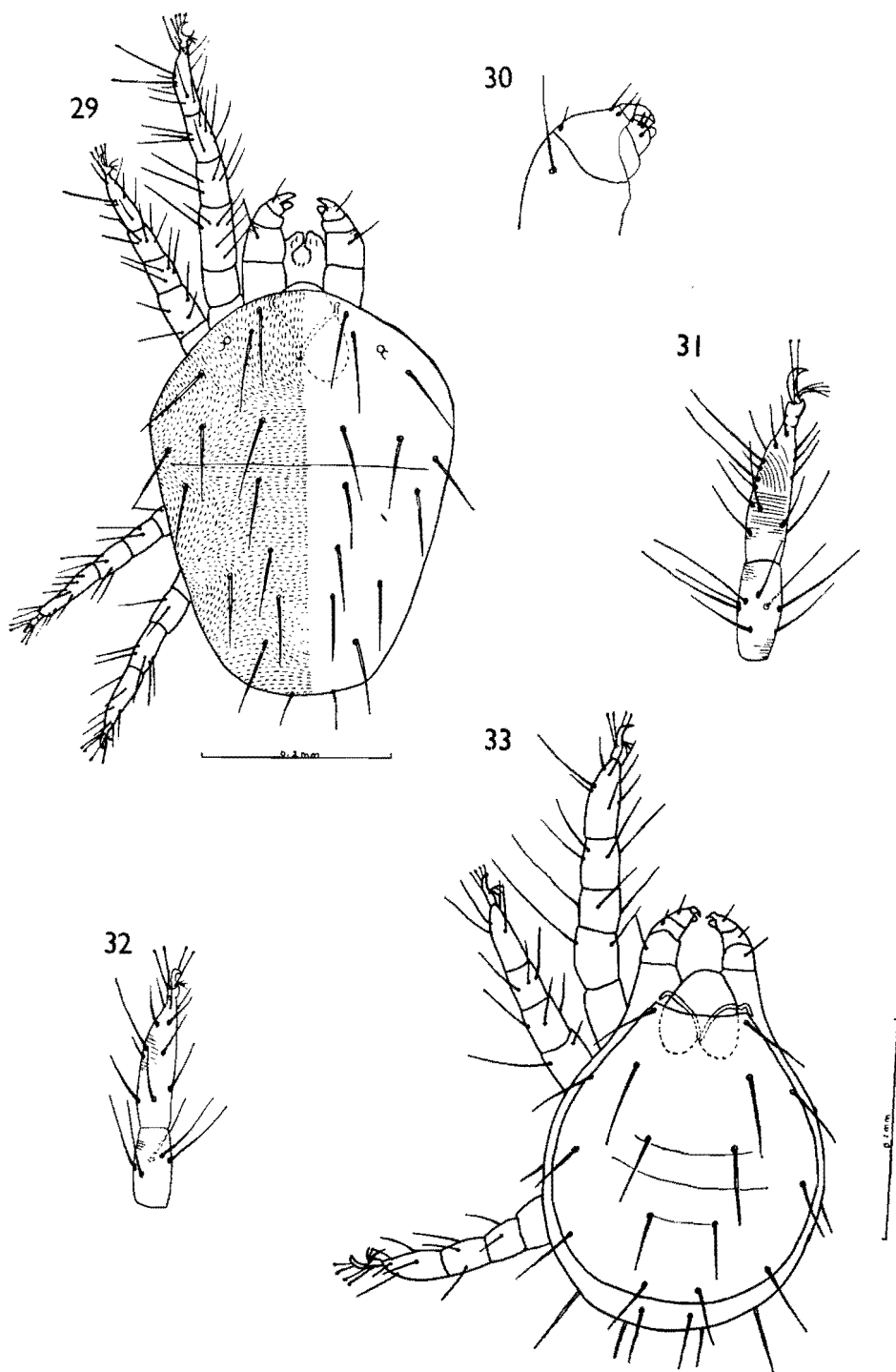
*Host and locality*. One holotype female and one larva from the flower of *Protea incompta*, Humansdorp, April 1955. Flowers collected and sent to author by Prof. H. B. Rycroft, Kirstenbosch.

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#### EXPLANATIONS OF FIGURES

Figs. 29-33. *Oligonychus proteae* n.sp.

Fig. 29, dorsum of female; fig. 30, palp of female; fig. 31, tibia & tarsus, leg I of female; fig. 32, tibia & tarsus, leg II of female; fig. 33, dorsum of larva.





**Pratensis-group Pritchard & Baker.**

The *Pratensis* group may be recognised by the proximoventral appendages of empodium I of the male which consist of a single pair of spurs; the aedeagus bends dorsad and is moderately enlarged at its distal end. The females of the different species are similar in appearance and, as a group, they exhibit the following characters: Tibia I bears nine tactile setae; tarsus I has four tactile setae proximad of the proximal set of duplex setae; the dorsal striations are transverse dorso-laterally as well as between the dorsocentral hysterosomals and longitudinal between the sacrales.

***Oligonychus pratensis* (Banks), 1912. (Figs. 34-38)**

*Female* (fig. 34).

Dimensions: Length of body, 470  $\mu$ ; breadth of body 356  $\mu$ . The females of this species resemble those of the other members of the *Pratensis*-group.

*Dorsum.* The striations on the hysterosoma of this oval-shaped mite are mainly transverse. The eyes are normal for the Tetranychidae. The 26 dorsal body setae are linear-lanceolate and not set on tubercles.

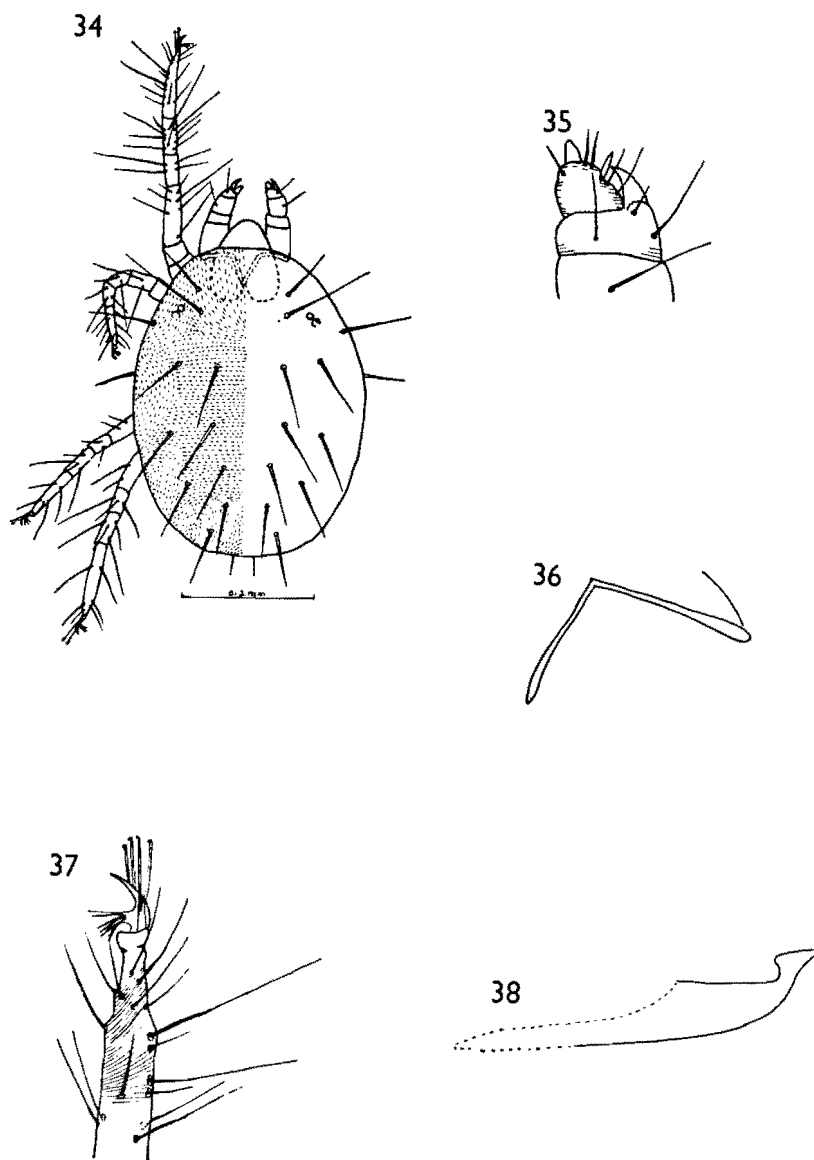
*Gnathosoma.* The mandibular plate being rounded in front is devoid of an emargination. The "thumb" of the palpus (fig. 35) is slightly broader than long, bearing a terminal sensilla which is twice as long as broad; two pin-shaped setae are present on the dorsal surface of the thumb apex; the dorsal sensilla is situated at the middle of the thumb and is slightly longer than the terminal sensilla; the thumb is provided with the usual three additional setae.

*Legs.* The legs are shorter than the body. Tarsus I (fig. 37) bears two sets of duplex setae which are well separated; four setae (three of which are tactile) are borne proximad of the proximal set of duplex setae. Tibia I bears nine tactile setae. The ventral aspect of the well-developed empodial claw is provided with six deflexed setae.

*Male.*

Dimensions: Length 231  $\mu$ ; breadth 170  $\mu$ . The body is smaller and narrower than in the female. A palpal spur and supporting tubercle are present. The aedeagus (fig. 38) is of the type of *Tetranychus telarius*; the inner lobe is rodlike; the shaft is stout and about twice as long as its basal thickness; it gradually tapers backward and bends upward with an angle beyond 90°; the hook forms a terminal knob which is twice as wide as the stem of the knob; the knob bears a blunt anterior and a sharp posterior projection, the latter being somewhat upturned.

*Host and distribution.* Specimens were found in the Eastern Transvaal and Orange Free State on the following host plant: *Digitaria diversinervis*.



Figs. 34-38. *Oligonychus pratensis* (Banks)

Fig. 34, dorsum of female; fig. 35, palp of female; fig. 36, collar trachea; fig 37, tarsus I of female; fig. 38, aedeagus of male.

**Oligonychus hadrus** Pritchard & Baker, 1955.

This species closely resembles *Oligonychus pritchardi* and *O. propetes*. It, however, differs from them in the fact that both sets of duplex setae on tarsus II are composed of members which are more or less equal in length, rather than having the proximal member of each duplex pair very short. The terminal sensilla on the palpus of the female is very slender and more than four times as long as broad.

The aedeagus is very similar to that of *Oligonychus propetes*. The postero-ventral portion curves dorsad; the large distal enlargement is dorsally strongly convex and bears a small anterior angulation and a large caudo-ventrally curved projection.

*Host and locality.* This species was described by Pritchard & Baker (1955). They were found on *Combretum zeyheri* in Pretoria.

Genus **Eotetranychus** Oudemans, 1931.

Pritchard & Baker (1955) retained the genus *Eotetranychus* and considered *Apotetranychus* and *Platytetranychus* as synonyms of the former. Members of this genus can be identified by the presence of the caudal pair of para-anals by the empodium (as in *Tetranychus*) which consists of three pairs of setae (fused in leg I of the male). Like the genus *Tetranychus* the members of this genus are also found on the under sides of the leaves where they form small colonies. In addition to the two pairs of para-anals the duplex setae on tarsus I are adjacent to each other. The striations on the dorsum usually run transversely between the third pair of dorsocentral hysterosomals and the sacralis.

The integumental striations on the genital flap and the number of tactile setae on tibiae I, II, and III are important characters for species recognition.

**Tiliarum-group** Pritchard & Baker.

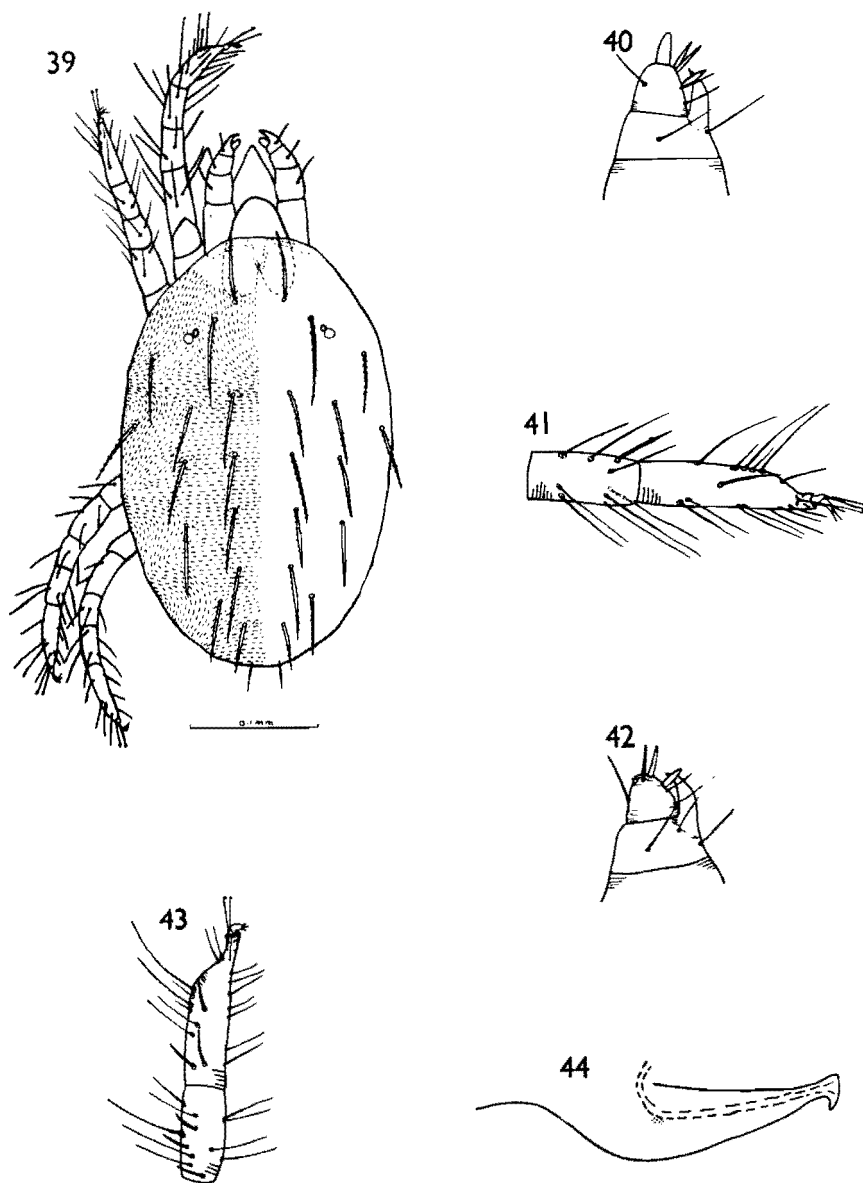
The mites of this group can be identified by the presence of eight tactile setae on tibia II. For species separation a lateral view of the aedeagus is necessary.

**Eotetranychus perplexus** (McGregor), 1950. (Figs. 39-44).

*Female* (fig. 39).

Dimensions: Length of body 409  $\mu$ ; breadth of body 289  $\mu$ . The colour is light green.

*Dorsum.* The hysterosoma has transverse striations in the region of the lumbar and sacral setae. The 26 dorsal body setae are strongly developed, linear-lanceolate, distinctly setose and not set on tubercles. The eyes are normal.



Figs. 39-44. *Eotetranychus perplexus* (McGregor)

Fig. 39, dorsum of female; fig. 40, palp of female; fig. 41, tibia & tarsus, leg I of female; fig. 42, palp of male; fig. 43, tibia & tarsus, leg I of male; fig. 44, aedeagus of male.

**Gnathosoma.** The mandibular plate is rounded in front. The main arm of the collar trachea is about twice the length of the deflexed arm. The terminal segment of the palpus (fig. 40) is about as long as it is broad; the terminal sensilla is about twice as long as broad; the dorsal sensilla and five additional setae are carried on the "thumb".

**Legs.** The legs are shorter than the body. Dorso-terminally, tarsus I (fig. 41) has two sets of duplex setae which are adjacent; four setae are borne proximad of the proximal set of duplex setae. The empodium consists of only three pairs of setae; the usual four tenent setae are present.

#### *Male.*

The male is smaller than the female. The legs are relatively longer than those of the female; tarsi I and II and tibia I (fig. 43) each have two or three very slightly swollen setae. The terminal sensilla of the palpus (fig. 42) is reduced to a small papilla; the dorsal sensilla is normal; the second segment of the palpus bears a hornlike spur. The thick shaft of the aedeagus (fig. 44) is much stouter at its base than at its distal end. The knob is inconspicuous, acutely pointed dorsally and provided with a curved ventral projection.

**Hosts and distribution.** Specimens were found on the following plants which were collected in Transvaal, Natal, and the Western Province: *Musa sapientum*, *Salix babilonica*, unidentified ornamental shrubs.

### Genus **Panonychus** Yokoyama, 1929.

*Panonychus* is similar to *Oligonychus* in having six setae borne at a common point on the ventral face of the main tarsal claw. McGregor 1950b) regarded *Metatetranychus* as a synonym of *Paratetranychus* (= *Oligonychus*) but Pritchard & Baker (1955) retained the genus *Metatetranychus* and considered the genus *Panonychus* to be a synonym of *Oligonychus*. Yokoyama who created the genus *Panonychus* only gave a description of *P. mori*, without the diagnosis of the genus. Ehara (1956) pointed out that *P. mori* is synonymous with *Metatetranychus citri* and that *Panonychus* has priority over *Metatetranychus*.

The mites belonging to this genus are characterised by the following: The dorsal setae are borne on tubercles; the empodial claw bears three pairs of proximoventral setae of equal length; two pairs of para-anal setae are present, the caudal pair of which is widely spaced; the latter pair is similar to the anterior pair and situated posterior to the anus.

### **Panonychus citri** (McGregor), 1916 (Citrus red mite) (Figs. 45-50).

Originally described as *Tetranychus citri*. Recently Ehara (1956) considered *Metatetranychus* as synonymous with *Panonychus* and formed the new combination *P. citri*.

*Female* (fig. 45).

Dimensions: Length of body, 427  $\mu$ ; breadth of body, 352  $\mu$ . The colour is velvety-reddish. The body is oval-shaped.

*Dorsum.* The 26 dorsal body setae (fig. 46) are linear-lanceolate, long, distinctly setose and are set on prominent tubercles; these setae are more or less arranged in four longitudinal rows. The setae of the second pair of dorsal propodosomals are three times longer than those of the first pair. The striations of the hysterosoma are mostly transverse. The eyes are typical of the tetranychids.

*Gnathosoma.* The mandibular plate is anteriorly provided with an inconspicuous emargination. The last segment of the palpus (fig. 47) is slightly broader than long; the terminal sensilla is longer than broad; the dorsal sensilla is short; the "thumb" is provided with the usual five additional setae.

*Legs.* The legs are shorter than the body. The duplex setae of tarsus I (fig. 48) are adjacent and placed near the distal end of the segment; four setae are borne proximad of the proximal set of duplex setae. The empodial claw has three pairs of proximoventral setae. There are two tenent setae present on each side of the claw.

*Male* (fig. 49).

Dimensions: Length 310  $\mu$ ; breadth 185  $\mu$ . The body is much smaller than that of the female. The legs are relatively longer than in the female. The palpus is provided with a hornlike spur on the second segment. The terminal sensilla of the last segment is approximately of the same length as the dorsal one. The aedeagus (fig. 50) has a short stout shaft which bends upward to form a slender tapering S-shaped curve.

*Hosts and distribution:* Hosts are primarily broadleaved ever-green trees and shrubs. It is of economic importance because it sometimes occurs very abundantly on citrus and ornamental shrubs. Host plants from which these mites were collected in the Transvaal are the following: *Citrus* sp. *Prunus persica*.

Tribe EURYTETRANYCHINI Rekk, 1950.

The members of this tribe can readily be recognised by the absence of duplex setae on tarsi I and II. The presence of these setae is characteristic of all the tribes in the family Tetranychidae. Tarsi I and II, however, may bear a single pair of dorsally-situated setae, which appears to be homologous with the duplex setae, but the proximal member of the pair is more strongly developed than the distal one. A pair of setae which resembles the second pair of duplexes is situated latero-ventrally on tarsus I. Ten pairs of dorsal hysterosomals and two pairs of para-anals are present on the striated dorsum. The peritreme ends in a simple bulb or hook.

Genus *Eutetranychus* Banks, 1917.

Pritchard & Baker (1955) regard *Anychus* as a synonym of *Eutetranychus*. This genus is distinctive in that the rudimentary empodium is only represented by a rounded knob. A pair of setae probably homologous with one pair of the duplex setae is situated on the dorsum of tarsus I.

*Eutetranychus banksi* (McGregor), 1914.

Studies by Pritchard & Baker (1955) indicated that *E. banksi* is a polytypic species and that there are several different morphological variants as far as the development of the dorsal body setae are concerned. According to them the description of *Anychus africanus* given by Tucker (1926) indicate that these specimens resemble those identified by Sayed (1946) as *A. orientalis* Zacher in which the dorso-central hysterosomal setae are shorter and more spatulate than usual. They regard both *africanus* and *orientalis* as synonyms of *Eutetranychus banksi*.

This species can be readily recognised by the dorsal setae which are not set on tubercles; the dorso-central hysterosomal setae are conspicuously shorter than the dorso-lateral hysterosomals. All the dorsal setae are short and spatulate. The simple aedeagus abruptly turns dorsad near the distal end. Pritchard & Baker (1955) observed no differences between the aedeagi of the males associated with the females representing the various lengths of dorsal setae.

*Eutetranychus banksi* was collected from oranges, lemons and *Plumeria* sp. Frangipani in Durban, Natal.

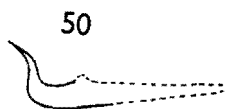
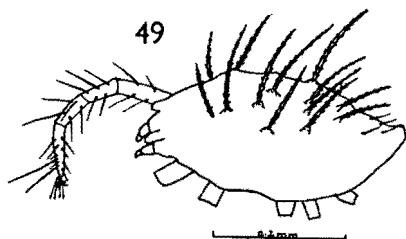
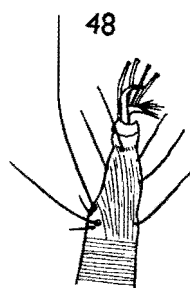
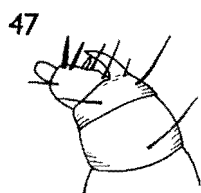
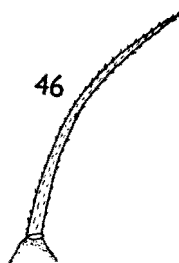
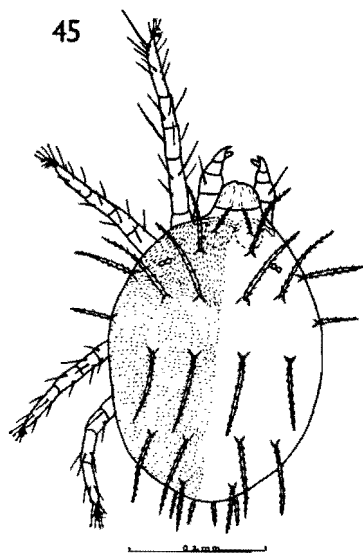
## Subfamily BRYOBINAE Berl., 1913.

This subfamily contains the most generalized members of the family Tetranychidae. In the genera *Bryobia* and *Tetranychopsis* the true claws are well developed. In the other genera they are reduced to a small slender pad bearing a pair of distal tenent setae. The peritremes end in a glomerate, elongate or saccular termination. The duplex setae are always placed at the abruptly declivate end of the tarsus. Some of the species possess four pairs of dorsal propodosomal setae while others have three pairs. The hysterosoma bears ten or twelve pairs of dorsal setae. Three pairs of anal setae are present in the female and five pairs of genito-anal setae in the male.

## EXPLANATIONS OF FIGURES

Figs. 45-50. *Panonychus citri* (McGregor)

Fig. 45, dorsum of female; fig. 46, dorsal seta; fig. 47, palp of female; fig. 48, tarsus I of female; fig. 49, lateral view of male; fig. 50, aedeagus of male.





Tribe BRYOBINI Rekk, 1952.

The members of this tribe can be readily distinguished by the presence of four pairs of dorsal propodosomals and twelve pairs of hysterosomal setae. The true claw is developed into a curved hook or a long pad which is provided with lateral tenent setae.

Genus **Bryobia** Koch, 1836.

Pritchard & Baker (1955) regard *Pseudobryobia* as a synonym of *Bryobia*. Mites belonging to this genus may be recognised by having the true claw uncinatate with one or several pairs of mediolateral tenent setae. Anteriorly the propodosoma is provided with two pairs of setae which usually arise from strong projections.

**Bryobia praetiosa** Koch, 1836 (Figs. 51-66).

A large number of synonyms exist for this species. In South Africa the name *Bryobia praetiosa* is in general use and it is one of the best known species in this country. It is commonly called the clover mite and is a serious pest of various agricultural crops.

*Female* (fig. 51).

Dimensions: Length of body, 625  $\mu$ ; breadth of body, 471  $\mu$ . The colour is reddish with grey, sometimes greenish-grey to dark brown. The body is flat, wrinkled and oval-shaped.

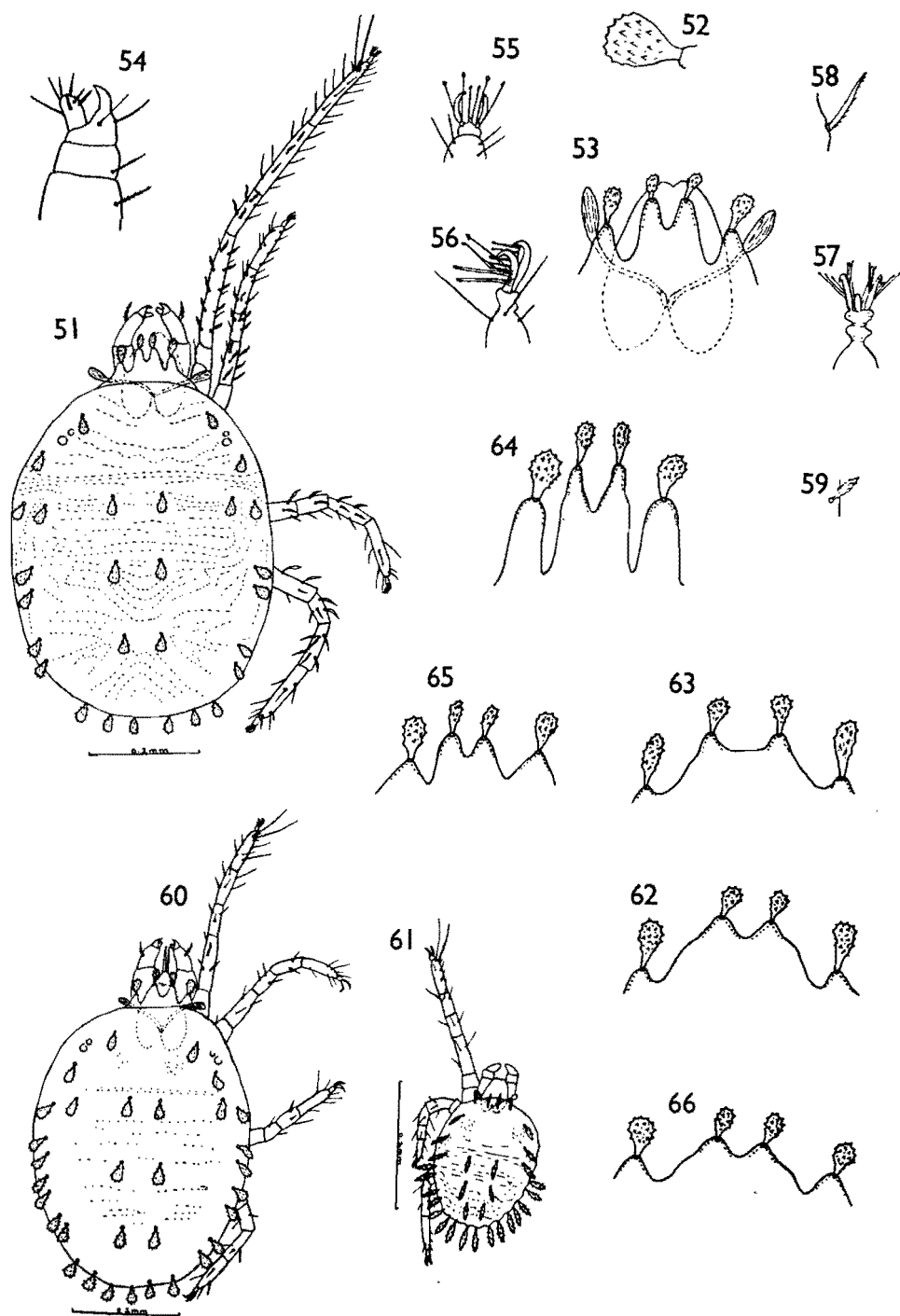
*Dorsum*. The striations are irregularly tortuous. A distinct sutural line occurs between the propodosoma and the hysterosoma. There are 14 pairs of leaflike setae (fig. 52) present on the dorsum. Two eye corneae are situated on each side over and behind coxa II. The front of the propodosoma is provided with four projections (fig. 53), the median pair being the longest. Each protuberance is tipped with a leaflike seta.

*Venter*. Ventrally, the setae are long and fine.

#### EXPLANATIONS OF FIGURES

Figs. 51-66. *Bryobia praetiosa* Koch

Fig. 51, dorsum of female; fig. 52, dorsal seta; fig. 53, anterior aspect of propodosoma; fig. 54, palp of female; fig. 55, claw complex, leg I of female; fig. 56, lateral view of claw complex, leg II of female; fig. 57, ventral view of claw complex, leg II of female; fig. 58, serrated seta on tibia I; fig. 59, leaf-like seta on femur I; fig. 60, dorsum of a young female; fig. 61, dorsum of larva; figs. 62-66, anterior propodosomal projections of females occurring on *Passiflora quadrangularis* (62), *Cydonia vulgaris* (63), *Daucus carota* (64), *Althaea rosea* (65) and *Pirus malus* (66).



*Gnathosoma.* The mandibular plate is oval and slightly incised in front. The frontal tracheae terminate externally as sausage-like processes. The palpus (fig. 54) is four-segmented; dorsally, the penultimate segment is provided with a stout claw; apically, the thumb bears seven setae, one of which is stout and lanceolate.

*Legs.* The forelegs are longer than the body, whereas legs II-IV are shorter. The tarsi are provided with two strong claws. Dorsally, tarsus I bears two sets of duplex setae. The number of tactile setae borne proximad of the proximal set of duplex setae varies between nine and seventeen. Empodium I (fig. 55) consists of a single pair of tenent setae. Tarsi II-IV (fig. 56-57) are each provided with a padlike empodium, bearing two rows of ventrally-directed tenent setae.

The forelegs of the immature females (fig. 60) are shorter than the body and striations on the dorsum are fainter than in the adults.

*Male.* Unknown.

*Larva* (fig. 61).

The bright red, six-legged larval stage differs from the adult therein that the dorsal setae are not leaflike but lanceolate to clavate and conspicuously setose.

*Hosts and distribution.* *Bryobia praetiosa* has a worldwide distribution and occurs throughout South Africa. It attacks deciduous fruit trees and numerous other plants. The following is a list of host plants on which this mite has been found. These were collected in the Western Province and the Transvaal. *Prunus amygdalis*, *P. persica*, *P. domestica*, *Pirus communis*, *P. malus*, *Vitis* sp., *Prunus armeniaca*, *Cydonia vulgaris*, *Daucus carota*, *Medicago sativa*, *Ficus carica*, *Althaea rosea*, *Passiflora quadrangularis*, many kinds of grasses and weeds.

*Discussion.* Geijskes (1939) pointed out that *Bryobia praetiosa* is not a sharply delineated species and that a number of subspecies or races occur on different hosts. Meltzer (1955) compared specimens from apples, pears and ivy and found differences in the body-shape and in the propodosomal projections of the different forms.

Differences are observed in the relative length and breadth of the anterior propodosomal projections of the South African representatives of this mite occurring on trees and herbaceous plants. The propodosomal projections of the mites which occur on herbaceous plants differ from those of the mites occurring on trees, but these differences are not consistent. The following are the variations found in the specimens collected.

a. The projections are shorter than usual and the indentation between the projections is not very deep (fig. 62).

b. The projections are shorter than those of the above mentioned (fig. 62) and the median projections are well separated (fig. 63).

c. The projections are longer and stronger than usual. The indentations between them are also deeper (fig. 64).

d. The indentations are much the same as that of the form which is shown in fig. 62; but the projections are broader (fig. 65).

e. The projections are short and strong and differ from the common form (fig. 66).

The projections of the tree-form are usually short and not as strong as those found in the herbaceous form. It was found that this form also occurs on hollyhock and granadilla. The herbaceous form in which the projections are strong and long was not found on trees. The mites in which the projections are of the normal length and breadth include specimens from trees as well as herbaceous plants. In many cases this can be accounted for by the fact that these forms drop onto the grass and herbaceous plants in the vicinity of the trees.

Pritchard & Baker (1955) found that specimens, which occurred on apple-trees in England, California and Chile appear to have the distal enlargement of the peritreme shorter and more globular and that it does not project anteriorly when the stylophore is protracted. Similar conditions obtain in some South African specimens from apple and plum trees. In specimens from hollyhock, quince and granadilla the peritremal enlargement is slender and protrudes antero-laterally. This condition is also very pronounced in the forms found on carrots.

Other differences observed in the carrot form are the longer forelegs which also bear setae which are longer than those in the normal forms.

Tribe PETROBIINI Rekk, 1952.

This tribe differs from the tribes of the Bryobiinae in the fact that the hysterosoma possesses only five pairs of dorsolateral and dorso-sublateral setae (the second and third dorsolateral setae are single, rather than paired). In many species the inner sacral setae are placed medially, in which case they resemble a fourth pair of dorsocentral hysterosomal setae; in others they are situated marginally with the result that the mite has three pairs of caudal setae. The true claw either consists of a slender pad bearing many pairs of tenent setae or the pad may be small with less setae; in some cases the claw may even be reduced to a single pair of tenent setae.

Genus **Aplonobia** Womersley, 1940.

Mites of this genus may be identified by the presence of a padlike empodium which is provided with two rows of tenent setae. The dorsum is provided with three pairs of propodosomal setae; the inner sacral setae resemble the dorsocentral setae and give the impression of being part of the latter series.

**Aplonobia histricina** (Berl.), 1910 (Figs. 67-71).

Pritchard & Baker (1955) regard *Tetranychopsis histricina* Berl. as a synonym of *Aplonobia oxalis* Womersley. As this species does not possess twelve pairs of dorsal hysterosomal setae, characteristic of the Bryobiinae, these authors formed the new combination of *Aplonobia histricina*. The possession of ten pairs of dorsal hysterosomals in this mite justifies its inclusion in the tribe Petrobiini.

*Female* (fig. 67).

Dimensions: Length of body, 820  $\mu$ ; breadth of body, 676  $\mu$ . The body is oval-shaped.

*Dorsum.* The dorsum is provided with 13 pairs of stout, serrate setae (fig. 68) which arise from strong tubercles and reach about as far as the distances between their bases. As in other species of this genus the dorso-centrals are present. Judging from the figures given by Pritchard & Baker (1955) these setae are situated further from each other in the South African specimens than in the Australian forms. There are numerous, closely set striations on the dorsum. The eyes are normal.

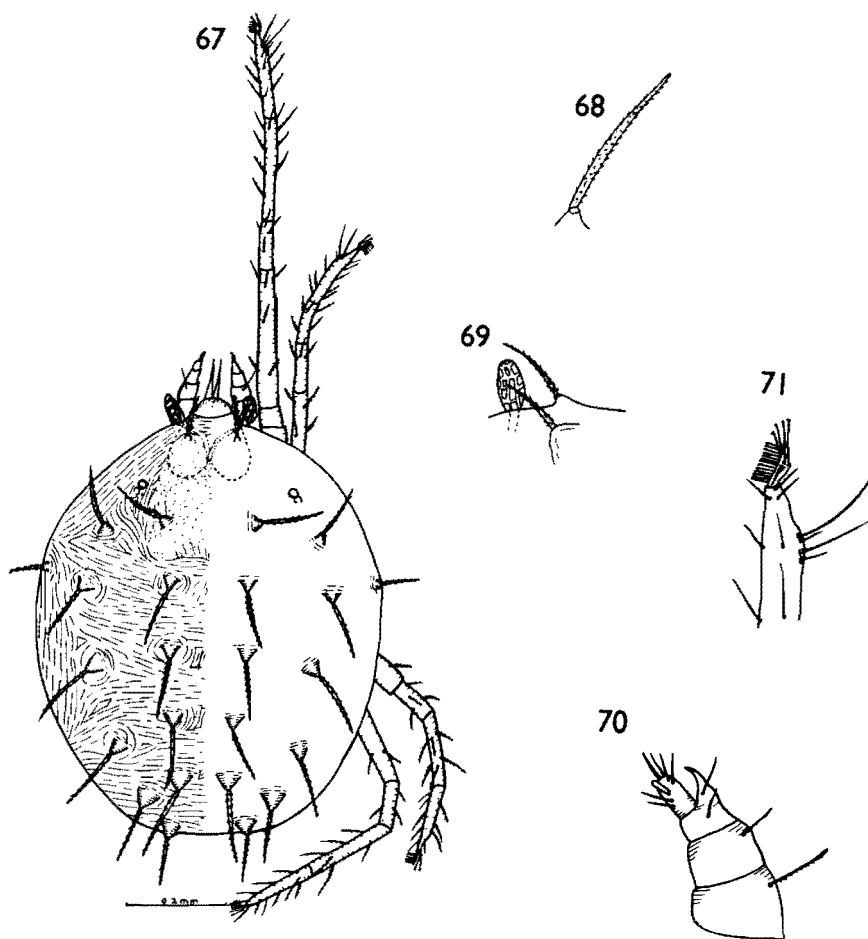
*Gnathosoma.* The mandibular plate is oval and somewhat notched in front. The frontal tracheae (fig. 69) protrude externally. Dorso-terminally, the penultimate segment of the palp (fig. 70) is provided with a stout claw; antero-ventrally, the penultimate segment bears the ventrally-directed thumb; the latter is subcylindrical and bears seven setae apically, one of which is clavate.

*Legs.* In the South African specimens the front legs are slightly longer than the body while the front legs of the Australian form are shorter than the body. Tarsus I (fig. 71) is shorter than tibia I and 15-16 setae are borne proximad of the proximal set of duplex setae. The claws are modified into pads, terminating in two tenent setae. The empodium consists of a pad which is twice as long as the pad of the true claw. The empodial pad bears a series of ventrally-directed tenent setae.

*Hosts and distribution.* Specimens of this mite were found on *Pirus communis*, collected in the Eastern Transvaal.

**Genus Petrobia** Murray, 1877.

Pritchard & Baker (1955) pointed out that several long existing genera such as *Tetranychina* etc. actually are synonyms of *Petrobia*. The members of this genus reveal the following distinctive character: The empodium is uncinat and provided with two rows of ventrally-directed tenent setae.



Figs. 67-71. *Apionobia histricina* (Berl.), female.

Fig. 67, dorsum; fig. 68, dorsal seta; fig. 69, termination of trachea; fig. 70, palp; fig. 71, tarsus I.

### ***Petrobia harti* (Ewing), 1909 (Figs. 72-78)**

Specimens referred to under the name *Petrobia harti* were, for many years, known under the name *Tetranychina harti*. The new combination of *Petrobia harti* was made by Pritchard & Baker (1955). Originally *P. harti* was included in the genus *Neophyllobius* by Ewing.

*Female* (fig. 72).

Dimensions: Length of body  $639\ \mu$ ; breadth of body  $561\ \mu$ . The colour is dark orange-red. The body is oval-shaped in dorsal aspect.

*Dorsum.* The 26 body setae (fig. 73) are rodlike and setose. They arise from tubercles and are longer than the distances between their bases. The clunal setae are shorter than the other hysterosomals. The usual perfect and imperfect eye cornea occur on each side.

*Gnathosoma.* The mandibular plate is rounded in front. The penultimate segment of the palpus (fig. 74) has a stout claw; the last segment bears seven setae, one of which is spindle-shaped.

*Legs.* The fore-legs are twice as long as the body. The tarsi of the legs are much shorter than the tibiae. Tarsus I (fig. 76) is dorso-distally provided with two sets of duplex setae; 17-18 setae are borne proximad of the proximal set of duplex setae. The empodium forms a terminal hook which bears two rows of tenent setae.

In the immature stages the legs are relatively shorter than those of the adults.

*Male* (fig. 77)

Dimensions: Length of body,  $338\ \mu$ ; breadth of body,  $232\ \mu$ . The body is much smaller and narrower than in the female and the legs are relatively longer, being about three times as long as the body. The dorsal setae are much shorter than those of the female and not set on prominent tubercles. The first pair of dorso-central hysterosomals are long and slender while the second to "fourth" (the inner sacral) pairs are shorter. The aedeagus (fig. 78) is straight and devoid of a knob; distally it gradually tapers to the thin truncated tip.

*Hosts and distribution.* Host plants from which these mites were collected in the Western Province and the Transvaal are: *Pennisetum longistylum* and *Trifolium* sp.

***Petrobia latens* (Müller), 1776 (Figs. 79-83).**

This species which was described by Müller (1776) as *Acarus latens* was transferred by Oudemans (1915) to the genus *Petrobia*.

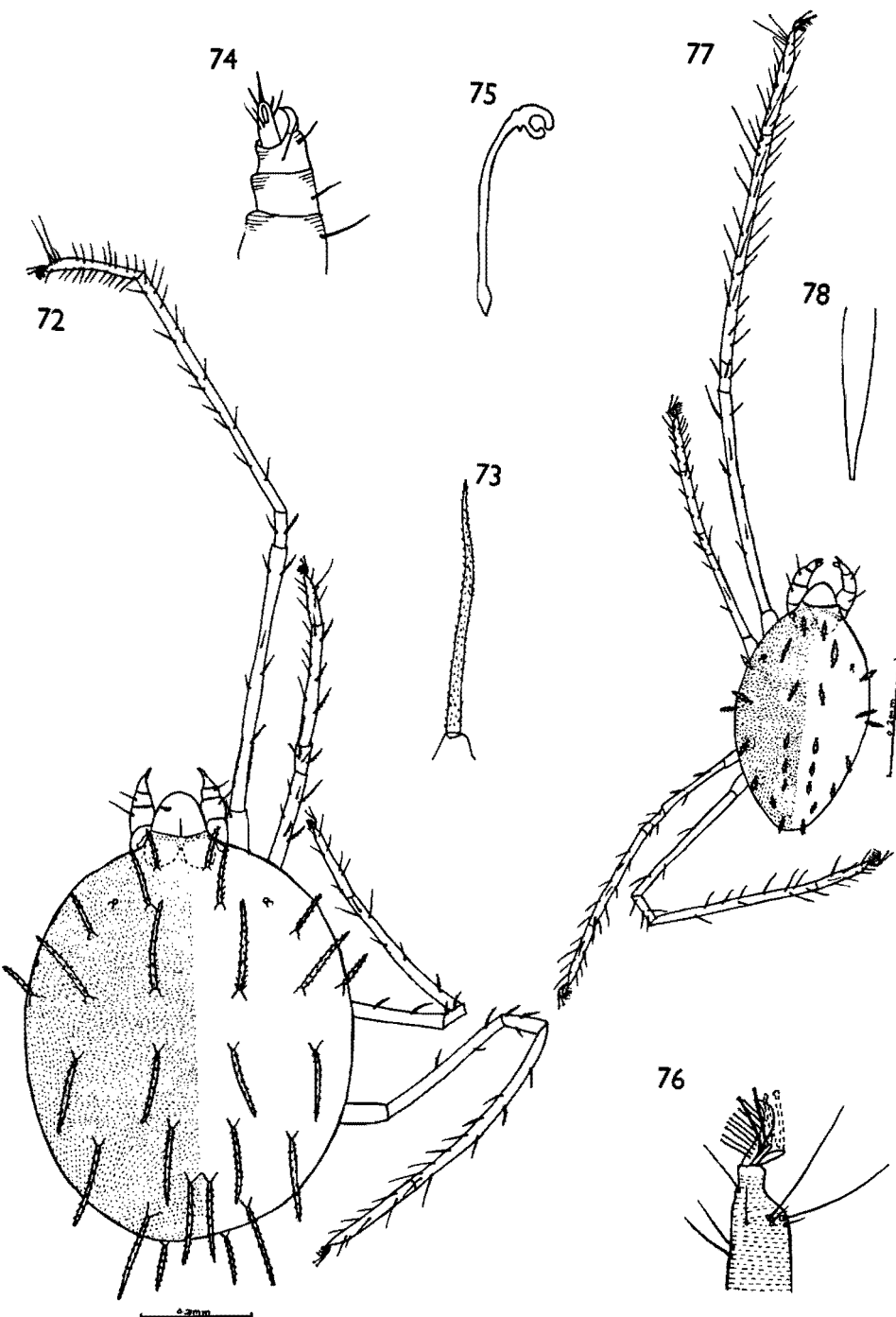
*Female* (fig. 79).

Dimensions: Length of body,  $510\ \mu$ ; breadth of body,  $380\ \mu$ . The body is broadly oval.

### EXPLANATIONS OF FIGURES

Figs. 72-78. *Petrobia harti* (Ewing)

Fig. 72, dorsum of female; fig. 73, dorsal seta; fig. 74, palp of female; fig. 75, trachea; fig. 76, tarsus I of female; fig. 77, dorsum of male; fig. 78, aedeagus of male.





**Dorsum.** The striations on the middle of the dorsum are transverse but mostly longitudinal on the dorso-lateral sides. The eyes are normal. Thirteen pairs of lanceolate setose setae (fig. 80) are present; all the setae are distinctly shorter than the distances between the bases of consecutive setae (fig. 79). In some specimens examined the posteriorly situated dorsal setae are longer than the others as shown in fig. 79a. These forms, however, can readily be distinguished from *Petrobia apicalis* (Banks) by virtue of the fact that the clunal setae are longer and that the sacral setae are not set on tubercles in the former.

**Gnathosoma.** The mandibular plate is oval and rounded in front. The frontal tracheae (fig. 81) protrude externally and form slender peritremal enlargements. The palpus (fig. 82) is four-segmented; the penultimate segment bears a stout claw; the last segment is provided with the usual seven setae on its distal third, one of which is clavate.

**Legs.** The fore-legs are longer than the body whereas the other legs are shorter. According to McGregor (1950b) tarsus I (fig. 83) is about as long as tibia I and according to Womersley (1940) the tarsi are slightly shorter than the tibiae but in the South African specimens tarsus I is about three-fourths the length of tibia I. The empodium is clawlike and provided with a series of ventrally-directed tenent setae along each side.

**Male.** Unknown, reproduction is parthenogenetic.

**Hosts and distribution.** Specimens were found in the Eastern Province, Transvaal and Orange Free State on the following host plants: *Triticum vulgare*, *Morus* sp., *Phleum pratense* and *Cichorium intybus*.

### Genus **Parapetrobia** n.gen.

The empodium in this genus is uncinat. It differs from the genera *Petrobia* and *Schizonobia* in that the empodium has two rows of dorsally-directed tenent setae. As regards the number of setae on the empodium it constitutes a position intermediate between these two genera.

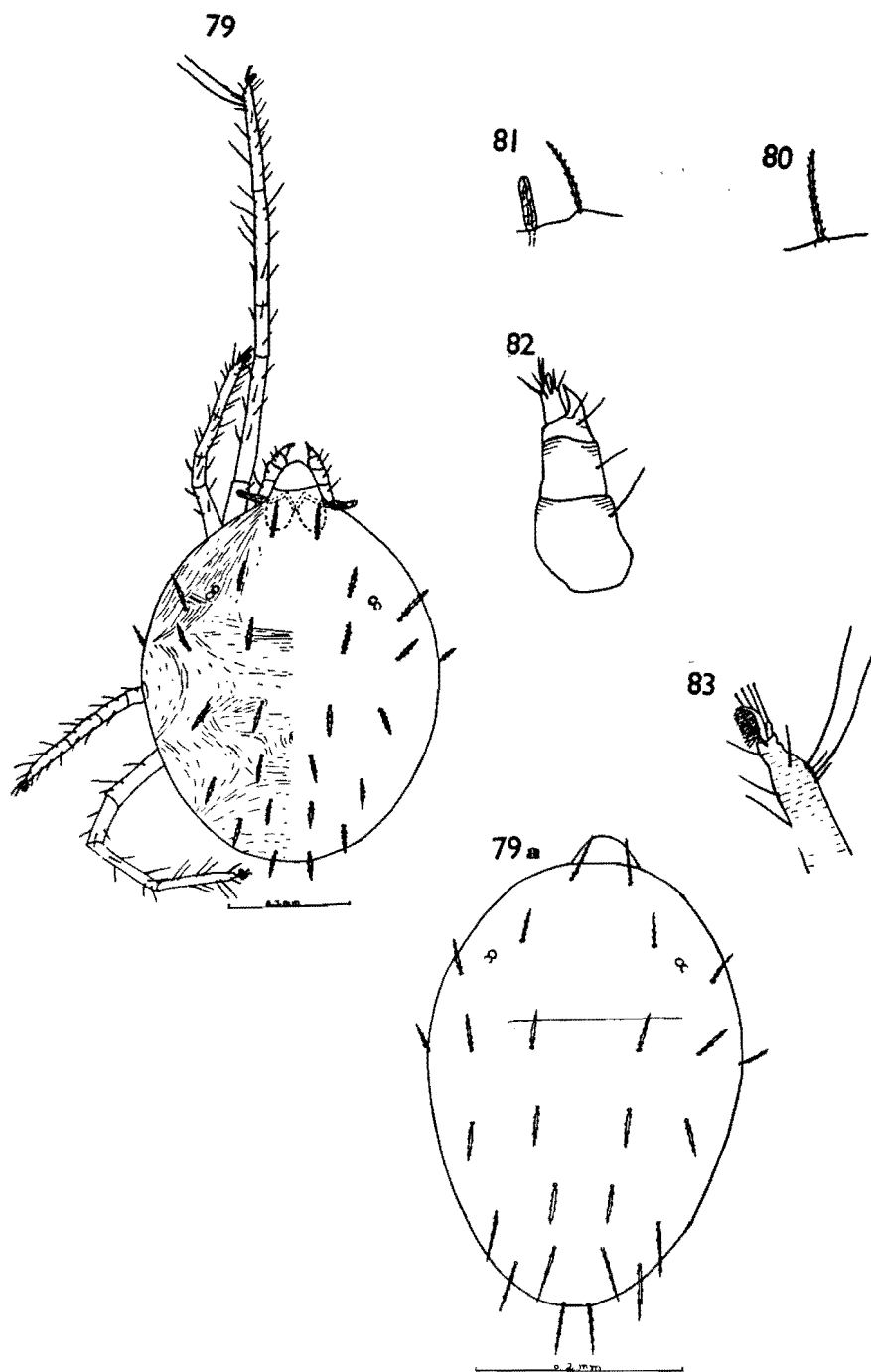
As in other members of the subfamily Bryobiinae there are two sets of duplex setae present at the abruptly declivate distal end of tarsus I. *Parapetrobia*, however, differs from them in having proximally another two sets of duplex setae of which the proximal member of each set is longer than the

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### EXPLANATIONS OF FIGURES

Figs. 79-83. *Petrobia latens* (Müller), female.

Figs. 79-79a, dorsum; fig. 80, dorsal seta; fig. 81, termination of trachea; fig. 82, palp; fig. 83, tarsus I.



proximal member of the distal duplexes. The distal members are much shorter. The thirteen pairs of dorsal body setae are arranged in four transverse rows. As in *Schizonobia* the fore-legs of the female are not lengthened. The peritremes resemble these of *Petrobia*.

**Parapetrobia capensis**, n.sp., (Figs. 84-87).

*Female* (fig. 84).

**Dimensions:** Length of body, 661  $\mu$ ; breadth of body, 500  $\mu$ . The colour is dark-grey with a dorso-medial lighter region. The body is oval-shaped.

**Dorsum.** The dorsal integument is provided with fine striations which are mostly transverse at the dorsocentral area of the hysterosoma and longitudinal laterally. Thirteen pairs of dorsal body setae, which are rodlike to lanceolate and coarsely setose, are set on prominent tubercles. These setae are arranged more or less in four transverse rows. The eyes could not be observed.

**Gnathosoma.** The mandibular plate is oval and rounded in front. The trachea (fig. 86) ends in a rounded anastomosing chamber. The palpus (fig. 85) is four-segmented; the penultimate segment is dorsally provided with a strong claw; the last segment of the palpus is subtended from the preceding segment. The thumb is two times as long as it is broad and bears four stout setae apically and one additional seta on each side of the segment.

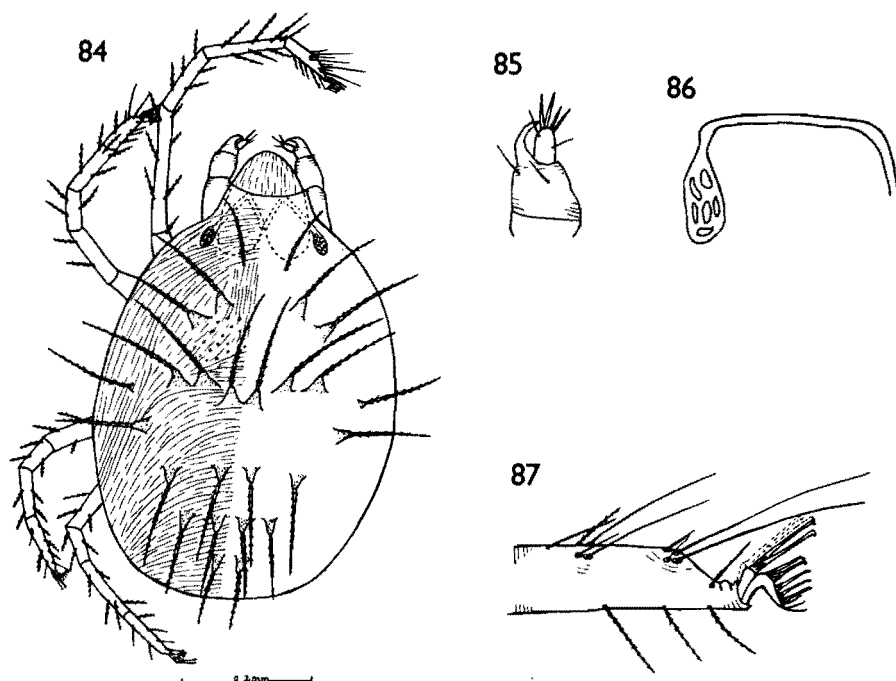
**Legs.** The fore-legs are not lengthened and are covered with setose setae. All the tarsi bear uncinat empodia, the hook bearing two rows of dorsally-directed tenent setae. In this respect it differs from *Petrobia latens* which has ventrally-directed tenent setae on the clawlike empodium. Each row consists of five to eight tenent setae which are fewer than those of *Petrobia latens*. Tarsus I (fig. 87) is provided with the usual two sets of duplex setae at the declivate distal end but it differs from other Tetranychidae by the presence of another two sets of duplex setae more proximally on tarsus I. The proximal member of this set is longer than usual and one of them is setose. Tarsus II has the usual one set of duplex setae.

*Male.* Unknown.

**Host and locality.** One holotype female from an unidentified wild low-growing plant, Grabouw, Cape Province, January 1955.

## SUMMARY.

The following species are figured and/or described: *Tetranychus tclarius*, *T. atlanticus*, *T. desertorum*, *Oligonychus bicolor*, *O. coffeae*, *O. proteae*, n.sp., *O. pratensis*, *O. hadrus*, *Eotetranychus perplexus*, *Panonychus citri*, *Eutetranychus banksi*, *Bryobia praetiosa*, *Aplonobia histricina*, *Petrobia harti*, *P. latens* and *Parapetrobia capensis* (n.gen. & n.sp.).



Figs. 84-87. *Parapetrobia capensis*, n.g. & n.sp., female

Fig. 84, dorsum; fig. 85, palp; fig. 86, trachea; fig. 87, tarsus I.

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